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IMAGES IN INTERVENTION

Ruptured Neoatherosclerosis Presenting as a Large Intrastent Neointimal Dissection

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A 77-year-old man was admitted for a prolonged chest pain. Nine years ago, he required the implantation of a bare-metal stent in the proximal left anterior descending coronary artery for stable angina. In the emergency department, the electrocardiogram showed dynamic

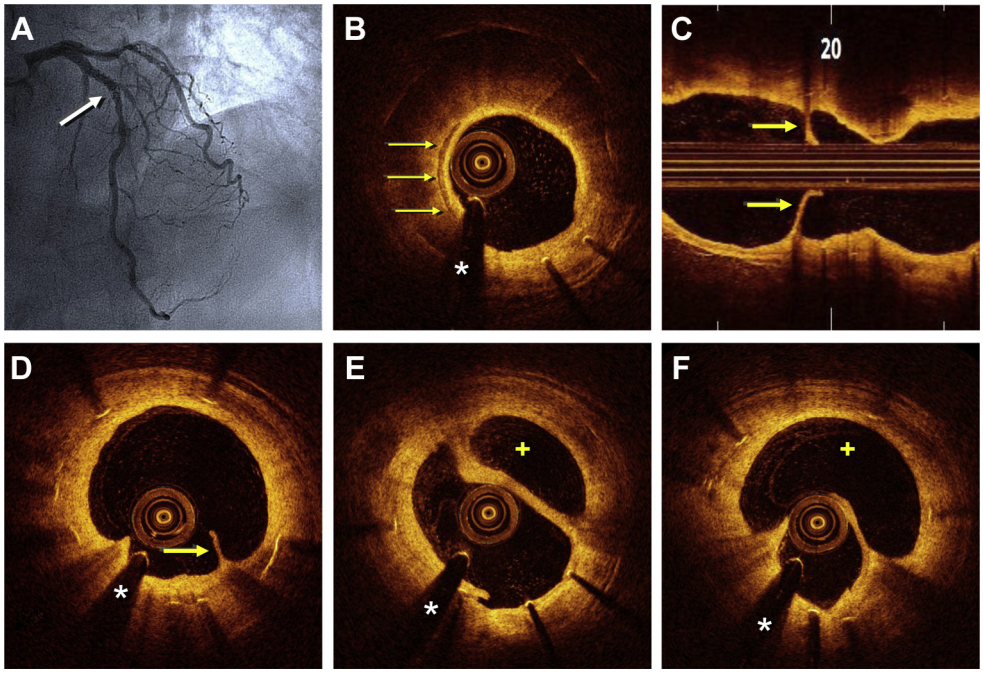

FIGURE 1 Intracoronary Insights of the Intrastent Neointimal Dissection

(A) Coronary angiography showing a linear haziness within the stent **(arrow)**. **(B)** Optical coherence tomography disclosing neoatherosclerosis with large lipid pools and a layered area **(arrows)** suggestive of in-stent calcified tissue. **(C)** Optical coherence tomography imaging demonstrating a neointimal dissection (arrows). **(D to F)** From proximal to distal segments, a large intrastent dissection with double-lumen morphology was observed. The **arrow in D** indicates neointimal dissection. A **plus sign (+)** indicates the false lumen. An **asterisk (*)** denotes wire artifact.

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ST-segment depression on the anterior leads. A significant increase in cardiac biomarkers was subsequently confirmed. Coronary angiography showed no significant coronary stenoses although a faint, linear haziness was visualized within the stent (**Figure 1A**). Optical coherence tomography revealed a typical pattern of nonocclusive intrastent neoatherosclerosis (NA) (**Figure 1B**). However, at the mid-segment of the stent, a clear rupture of a very bright, glistening neointima was readily demonstrated (**Figure 1C**). Interestingly, this tear induced a relatively large intrastent dissection (up to 5 mm in length) and a striking double-lumen morphology (**Figures 1D to 1F**). Mean dissection thickness was 340 μm. Minimal lumen area of the true lumen was 1.7 mm^2, and maximal area of the false lumen was 3.6 mm^2. No residual intracoronary thrombi were recognized. An excellent result was obtained with the implantation of an everolimus-eluting stent.

NA is a well-defined cause of very late in-stent restenosis and stent thrombosis (1). Because of its unsurpassed resolution, optical coherence tomography provides a unique tool in the diagnosis of NA (2,3). Characteristic findings include infiltrated neointima, lipid pools, thin-cap fibroatheroma, calcification, and even macrophage accumulation (2,3). Complicated NA is characterized by relatively confined neointimal ruptures with associated intracoronary thrombus (2,3). However, our unique findings suggest that complicated NA may also present as a relatively large, angiographically silent, intrastent coronary dissection.

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